

PADDLES AND ENCLOSURES FOR ENHANCING MASS TRANSFER DURING  
PROCESSING OF MICROFEATURE WORKPIECES

ABSTRACT OF THE DISCLOSURE

Paddles and enclosures for processing microfeature workpieces are disclosed. A paddle device having multiple paddles is positioned in an enclosure to reciprocate back and forth along a generally linear path. The clearances between the paddles, the workpiece and the walls of the chamber are relatively small to increase the flow agitation at the surface of the workpiece and enhance the mass transfer process occurring there. The paddles are shaped to reduce or eliminate electrical shadowing effects created at the surface of the workpiece during electrochemical processing. Paddles on the same paddle device may have different shapes to reduce the likelihood for creating three-dimensional effects in the flow field proximate to the surface of the workpiece. The reciprocation stroke of the paddles may shift to further reduce shadowing.